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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,589	11/13/2003	Guozhu Long	21676-07332	4531

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FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

EXAMINER	
CEHIC, KENAN	
ART UNIT	**PAPER NUMBER**
2609	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/713,589	LONG ET AL.	
	Examiner	Art Unit	
	Kenan Cehic	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-12 and 14-18* is/are rejected.

7)☒ Claim(s) *1-9,13 and 19-27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/08/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because contains the terms "are disclosed" (see line 1) . Correction is required. See MPEP § 608.01(b).

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

3. Claim 1-27 are objected to because of the following informalities:

For claim 1, for the acronyms "TTR", in line 1,5,8,10 and "TCM" in line 2; the full meaning should be written. Similar problems exist in claims 2, 4, 5, 10, 11, 13, 14, 19, 20, 22, 23.

For claim 1, the word of the claim limitation "Channel Discovery Phase" in line 5,8, should be written in lower case letters. Similar problems exist in claims 10, 19.

For claim 1, the terms "a TTR clock" in line 7, seems to refer back to "a TTR clock " in claim 1 line 1. If this is correct it is suggested to applicant to change these terms to --said TTR clock--.

Claims 3, 6-9, 12 16-18, 21 24-27 are objected since they depend on objected claims.

For claims 20-27, the claim limitation " The transceiver" in line 1 should be replaced with –The central office DSL transceiver—, so that is clear which transceiver or claim 19 is meant.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 10-12, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the disclosure of Hasegawa et al (US 2001/0024454 A1) in view of background of Okamura (US 6,558,024 B1). Hereinafter referred as Hasegawa and Okamura.

For claim 10, Hasegawa teaches receiving a TTR indication signal (see section 0070, the phase of the TTR clock is sent in a symbol; also see Figure 13b, note "S" for synchronization symbol) from a central office DSL transceiver (see section 0070, line 1), the TTR indication signal comprising at least one hyperframe (see section 0071 also see figure 13c, the synchronization symbol is part of a frame) that includes a plurality of symbols (see Figure 13b, note multiple symbols in the frame);
using at least a portion of the TTR indication signal (see section 0070, the phase of the TTR clock is sent in a symbol; also see Figure 13c, note "S" for synchronization symbol) to synchronize a local TTR clock (see section 0072, the customer TTR clock is synchronized using the phase information) thereto (see section 0070 lines 1-5, the phase information of the TTR clock is sent to the subscriber modem) ; and

For claim 11, Hasegawa teaches a first set of symbols (see Figure 13c, note "S") for indicating the hyperframe boundary (see Figure 13b, note "S" is at the beginning and end

of the frame thus marking a boundary; also see section 0146 lines 9-10); and a second set of symbols (see Figure 13c, note the rest of the symbols).

For claim 12, Hasegawa teaches wherein the first set of symbols includes the first continuous group of symbols of the hyperframe dominated by far-end crosstalk interference (see Figure 12e and Figure 13 b; both diagrams have the same TTR clock (Figures 12a and 13b), where it is shown that FEXT (far end crosstalk) happens at the ends, thus making the "S" fall into the FEXT region; also see section 0070, where the synchronization symbol is classified as a FEXT symbol)

Hasegawa does not teach that the some of the symbols do not contain any signals from the central office and that during those symbols noise is measured. Okamura from the same or similar field of endeavor teaches those features.

For claim 10, Okamura teaches some of which contain no signal from the central office DSL transceiver (see column 3 lines 1-5; while frames (which Okamura defines as carriers) are being transmitted from the central office (ATU-C), the symbols are generated randomly for measurement purposes) ; and measuring a quiet noise parameter during symbols of the hyperframe (see abstract lines 9-10, carriers are defined as frames carrying symbols) in which no signal is received from the central office DSL transceiver (see column 3 lines 1-17, noise measurement is performed on the symbols that are randomly generated by the ATU-C generator).

For claim 11 and 12, Okamura teaches where the rest of the symbols have no signal for allowing quiet noise measurement (see column 3 lines 1-17, noise measurement is performed on the symbols that are randomly generated by the ATU-C generator).

For claim 16, Okamura teaches, measuring at least one quiet noise parameter during the second set of symbols (see column 3 lines 1-17, noise measurement is performed on the symbols that are randomly generated by the ATU-C generator, note these symbols can occupy the entire frame (see abstract lines 9-10, carriers are defined as frames carrying symbols), thus they are the same as the first set of symbols that sets the frame) boundaries).

For claim 17, Okamura teaches wherein the measured quiet noise parameter is quiet noise level per bin (see column 2 lines 27-36, the carriers are divided in to certain frequency widths, each carrier noise level is measured, which means noise level is measured per frequency width).

For claim 18, Okamura teaches, wherein the measuring at least one quiet noise parameter is performed for symbols (see column 3 lines 1-17, noise measurement is performed on the symbols that are randomly generated by the ATU-C generator) in the presence of far-end crosstalk or near-end crosstalk (see column 2 lines 19-27, measurement is performed during near and far-end interference).

Thus it would have been obvious to a person of ordinary skill at the time of the invention was made to combine the teachings of Okamura into the method taught by Hasegawa. One could have implemented the random signal generator (see Fig. 5, reference 25a) as

taught by Okamura into the "Office Transmitter" as taught by Hasegawa in Figure 4. Thus it would have been possible for the system of Hasegawa to produce symbols with no real signals from the office transmitter, but just random symbols. Furthermore, one could have implemented the noise measurement device ("SNR measurement section" in Figure 5 of Okamura) into the "Subscriber receiver" in Figure 4 of Hasegawa. With this device the subscriber receiver would be able to measure the noise of the random symbols sent by the office transmitter.

The motivation for claims 10-12, 16-18 is that one is able to determine the bit and gain distribution of the DSL carriers with respect to FEXT and NEXT periods (see column 2 lines 19-27 of Okamura).

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over disclosures of Hasegawa et al (US 2001/0024454 A1) and Okamura (US 6,558,024 B1) as applied to claim 12 above, and further in view of Ginesi et al (US 7,050,825 B2).

For claim 14, Hasegawa and Okamura teach all the claim invention as described in paragraph 7. Additionally, Hasegawa and Okamura teach that the TTR indication signal signal (see section 0070 of Hasegawa; the phase of the TTR clock is sent in a symbol; also see Figure 13b, note "S" for synchronization symbol). However, they do not teach that a REVERB signal are sent. Ginesi et al from the same or similar field of endeavor teaches wherein a signal comprises a REVERB signal (see column 4 lines 57-61, REVERB signals are sent) transmitted during the first set of symbols (see column 5 lines 27-29; the REVERB signal is just one of other signals sent).

Thus it would have been obvious to a person of ordinary skill at the time of the invention was made to combine the sending of the a REVERB signal during an TTR indication signal, that compromises of multiple symbols. One would have been able to eliminate some of the "S" symbols as taught by Hasegawa (see Figure 13B) and insert the REVERB signal into one of those symbols. This could have been implemented by the Office transmitter (see Figure 4 reference 910) as taught by Hasegawa.

The motivation is that during the transmission of a REVERB signal, noise measurements can be performed (see column 4 lines 52-61 of Ginesi et al). Thus the channel can be optimized for later data transmission.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over disclosures of Hasegawa et al (US 2001/0024454 A1) and Okamura (US 6,558,024 B1) and Ginesi et al (US 7,050,825 B2) as applied to claim 14 above, and further in view of disclosure of Okita (2004/0025101 A1).

For claim 15, Hasegawa ,Okamura, and Ginesi et al teach all the claimed invention as described in paragraph 8. Hasegawa ,Okamura, and Ginesi teach the REVERB signal of claim 15, however they do not teach that it is sent in frequency ranges that are not attenuated. Okita from the same or similar field of the endeavor teaches that signal includes a range of sub-carriers (see section 0008, signals are sent in different frequency ranges, thus the signals have range of frequency sub-carriers) selected in a frequency range low enough to avoid being attenuated (see section 0008 lines 9-14) when

transmitted to the customer premises DSL transceiver (see section 0002 lines 11-13, the invention can be applied to ADSL technology, thus it can apply to DSL modems also). Thus it would have been obvious to a person of ordinary skill at the time of the invention was made to include signals at low frequency ranges, in order to avoid attenuation. One could have easily implemented the sending of signals on a low frequency via an RF mixer, which is well known in the art. The Office transmitter, which is a DSL modem, has usually those mixers or it could be very easily implemented.

The motivation for sending signal at a low frequency where they are not attenuated is that the signal is not attenuated, meaning it does not lose strength and the full strength signal is received.

Allowable Subject Matter

10. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Additionally, the objections set forth in this objection need to be overcome.

For claims 13-14, the prior art fails to teach embedding any kind of timing information into the standardized C-COMB signal, which is transmitted during the channel discovery period of DSL initialization. While it is well known in the art to include timing information into signals (as in US 6,449,316 B1), there was no motivation to include TCM-ISDN timing reference information into a signal (C-COMB) which is used mainly for testing measurements.

11. Claim 1-9, 19-27 are objected as set forth in this office action, however would be allowable if the objections are overcome.

For claim 1,13, and 19 the prior art fails to teach embedding any kind of timing information into the standardized C-COMB signal, which is transmitted during the channel discovery period of DSL initialization. While it is well known in the art to include timing information into signals (as in US 6,449,316 B1), there was no motivation to include TCM-ISDN timing reference information into a signal (C-COMB) which is used mainly for testing measurements.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US-3,835,260 A	09-1974	Prescher et al.
US-6,266,347 B1	07-2001	Amrany et al.
US-7,167,509	01-2007	Hasegawa et al.
US-2001/0043620 A1	11-2001	Amatsubo et al.
US-6,449,316 B1	09-2002	Matsumoto et al.
US-6,580,752 B1	06-2003	Amrany et al.
US-6,724,849 B1	04-2004	Long et al.
US-2004/0105454 A1	06-2004	Okamura, Yusaku
US-7,058,152 B2	06-2006	Long et al.
US-7,142,501 B1	11-2006	Barrass et al.

The above references are cited to show methods of synchronization/interference ISDN and DSL.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenan Cehic whose telephone number is (571) 270-3120. The examiner can normally be reached on Monday through Friday 7:30AM to 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dang Ton can be reached on (571) 272-3171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KC

DANG T. TON
SUPERVISORY PATENT EXAMINER